substrate during the implantation in step(2).

27. (Amended) The method of claim [3] 2 wherein the [said] second dose is chosen in the range from 1×10^{13} cm^{-2} to 5×10^{16} cm^{-2} to form an amorphous region beneath the major surface containing both a majority of top silicon layer and all the buried oxide layer, which is formed in step(3).

28. (Amended) The method of claim 3 wherein the [said] second kind of ion is silicon ion.

REMARKS

Reconsideration and allowance of the subject application are respectfully requested.

Claims 1-18 and 21-33 are pending in the application.

Claims 2, 4-20 and 29-33 stand withdrawn pursuant to a restriction requirement. Claim 1 is generic to all species. Applicant confirms the election of Species I, claim 28 without traverse.

In response to the objection to the drawings at paragraph 10 on page 5 of the Office Action, submitted herewith is a Drawing Change Authorization Request adding new Figs. 1A-C, 2A-B and 3A-C, and renumbering Figs. 1-7 as Figs. 4-10 respectively. The new Figs. 1A-C, 2A-B and 3A-C show the specific layers and regions disclosed in the originally filed application. The new Figs. 1A-C, 2A-B and 3A-C are fully supported by the originally filed specification as demonstrated by the amendments shown above to add reference numbers to the originally disclosed layers and regions. Thus, no new matter has been added.

The objections to the claims 3 and 21-28 at paragraph 11 on page 5 of the Office Action are obviated by the amendments to the claims as shown above, with one exception. Applicant has not amended claim 1 to replace a "claim I" with "claim l" since Applicant's record of pending claim 1 shows that reference is made to claim l.

These amendments do not affect the breadth of the claims. Accordingly, withdrawal of the objections to the claims is respectfully requested.

The rejection of claims 1, 3, and 21-28 under 35 U.S.C. § 112 is obviated by the amendments to the claims as shown above. Accordingly, withdrawal of the Section 112 rejection is respectfully requested.

The rejection of claim 1 under 35 U.S.C. § 102 over Griffith is respectfully traversed. Claim 1 is not anticipated by Griffith for the following reasons.

Griffith teaches a method of forming an electric field shielding layer in a SIMOX substrate, in which the annealing temperature for the dual oxygen/silicon-implanted substrate is in the range of 1150°C to 1250°C (not greater than 1250°C). This process leads to the formation of an oxygen-doped polycrystalline EFS layer(32) between the buried dielectric silicon dioxide layer(13) and the upper monocrystalline silicon layer(14), while a thin interfacial silicon dioxide layer (33) is formed between the polysilicon FES layer(32) and the crystalline silicon layer(14). As a result, the resulting SOI material has a five-layer structure as shown in Fig.4 of Griffith, which has a drawback of high leakage current in back MOS transistors of CMOS circuit near the polysilicon layer(32).

In contrast, the main purpose of present invention is to eliminate threading dislocation in top silicon layer and to eliminate silicon islands and pinholes, which will affect the carrier mobility in top silicon layer and electric isolate property of buried oxide layer.

In the present invention, when the annealing temperature is in the range of 1250°C to below the melting point of silicon, no polysilicon layer will be formed between the top Si layer and the amorphous buried silicon dioxide layer. The resulting SOI material has a three-layer structure as shown in Fig. 10, which overcomes the above drawback existing in Griffith.

In addition, although both the present invention and Griffith adopt ion implantation for amorphizing the substrate, the amorphous region in Griffith is a relatively thin layer (22 in Fig.2 of Griffith) between the top Si layer(14) and the buried

oxide layer(13), while the amorphous region in the present invention includes the entire buried silicon dioxide layer and most of the top Si layer.

In view of the many differences between present claim 1 and Griffith, withdrawal of the Section 102 rejection is respectfully requested.

The rejection of claims 3 and 21-28 under 35 U.S.C. § 103 over Griffith in view of Ogura is respectfully traversed. There is no motivation to combine Griffith with Ogura and for that reason alone the Section 103 rejection should be withdrawn.

Even if Griffith and Ogura were combined, the claimed invention would not be taught or suggested by the combination. Griffith does not teach the claimed range of 1250°C to below the melting point of silicon for the reasons provided above and Ogura does not provide this deficiency.

Furthermore, Ogura teaches a method of fabricating an SOI substrate by forming a continuous silicon dioxide film. It generally includes the steps of implanting silicon ions into the substrate, then performing first annealing at rather low temperature, for example at 650°C for getting a damage region, and then implanting oxygen ions into the area including the damage region of substrate, and applying thermal annealing to the substrate. It should be noted that the first implanted ions are silicon ions and the second implanted ions are nitrogen/oxygen ions in Ogura, which is contrary to what the Examiner asserted in the pending Office Action. However, in the present invention, first implanted ions are nitrogen/oxygen ions and the second implanted ions are silicon ions for amorphous process. Thus, the claimed invention is opposite to Ogura's method.

In addition, the amorphous process by silicon implantation is not a necessary condition in Ogura's invention. The necessary condition in Ogura is to obtain a damage region. So Ogura teaches to use boron implantation, which cannot result in amorphous region, and Ogura uses silicon epitaxial growth as well for obtaining damage region.

From the above, it is quite clear that the combination of Griffith and Ogura do teach or suggest the claimed invention. Accordingly, withdrawal of the Section 103 rejection are respectfully requested.

In view of all of the objections and rejections of record having been addressed, it is believed that the present application is in condition for allowance and Notice to that effect is respectfully requested.

Respectfully submitted,

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